Report by the Green Communities Designation Study Committee to the Board of Selectmen

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Respectfully Submitted:

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1.0 Instructions to the Green Communities Designation Study Committee from the Board of Selectmen

Green Community Designation Study Committee

Scope: The Upton Board of Selectmen shall appoint a **G**reen **C**ommunity **D**esignation **S**tudy **C**ommittee (GCDSC) consisting of 5 members that shall self organize and hold meetings that comply with the open meeting law (M.G.L., c. 30A, §§18-25). In addition to submitting meeting notice, agenda, and minutes to the Upton Town Clerk, the GCDSC shall submit meeting minutes as they are written to the Board of Selectmen for their review. All requests for resources to complete the mission shall be directed to the Upton Board of Selectmen for their approval and appropriation. The GCDSC should meet with all town committees and department heads that may be impacted by this decision and seek their input. The GCDSC has one mission and one action item as specified below.

Mission: The GCDSC shall investigate and report on the feasibility and implementation of becoming a Massachusetts Department of Energy Resources (DOER) designated green community.

Action: The GCDSC will meet with, but not be limited to, the following committees or individuals:

- Planning Board
- Conservation Commission
- Board of Health
- Police Chief
- Fire Chief
- DPW Director
- Code Enforcement

The GCDSC shall submit a written report to the Upton Board of Selectmen no later than December 31, 2013. The report shall contain the following elements:

- Abstract
- Executive Summary
- Recommendation based on a triple bottom line assessment
- Situational Assessment
  - Opportunities
  - Challenges
- Impacts
  - Pros
  - Cons
- Planning
  - Objectives
  - Implementation strategy and Time Line
- Alternatives and Options
- Conclusion

2.0 Abstract

The Green Communities Designation Study Committee investigated the benefits, costs, opportunities, challenges, and actions associated with becoming a Green Community. The Committee obtained information from the Green Communities program, the chair of Mendon's Land Use Committee (which prepared Mendon's application for Green Community designation and manages its Green Community program,) discussions with officials from other Green Communities, town departments, and online from other municipalities, state and federal agencies, and other organizations.

The Committee recommends that the town pursue Green Communities designation. It believes that the tangible benefits, the grants available under the program and cost savings from energy efficiency measures funded with the grants, outweigh the tangible costs, legal and administrative expenses. The Committee also believes the town will benefit from participating in the state's effort to reduce greenhouse gas emissions. The Green Communities program is part of the state's Clean Energy and Climate Plan to reduce greenhouse gas emissions to 25% below 1990 levels by 2020. The state forecasts that its plan will help mitigate the impact of air pollution and climate change, reduce dependence on outside sources of energy, and create 42,000 to 48,000 clean energy/energy efficiency jobs by 2020.

The Committee notes that the state's existing Stretch Energy Code is likely to change, but fully expects the changes to be reasonable and cost-efficient. Analyses of the energy savings and costs of above-base code energy efficiency measures required under the existing Stretch Energy Code prepared by the Department of Energy Resources (DOER) showed the energy savings exceeded the mortgage payment associated with the above-base code energy efficiency measures, and simple payback periods of 3 to 7 years for the above-base energy code efficiency measures. The Committee also believes that there are reasonable offsetting arguments to the concerns raised by opponents of the Stretch Energy Code. As such, the Committee recommends that Town Meeting consider adopting the Stretch Energy Code. If it is possible to wait to bring the Stretch Energy Code to Town Meeting until after the changes are determined and still meet the October 30, 2014 deadline to apply for Green Communities designation, the Committee recommends waiting until then. The Committee recommends that town strive to apply for designation in 2014 in order to take advantage of the grants and the energy savings from the grant-funded energy efficiency measures as soon as possible. Obtaining designation in 2014 will also allow the town to include the energy savings associated with the Town Hall renovation as part of the energy reduction in its plan to reduce energy use by 20% over 5 years (the 20%/5-year energy reduction plan is another requirement for Green Communities designation.)

There were two specific concerns with the Green Communities designation criteria raised by the Town Manager. The first was that the town would find itself in a position where it would need to pay for energy efficiency measures in order to meet its goal of reducing energy use by 20% over 5 years, one of the requirements of designation, and would not have the funds. At this point, nothing has been included in the town's capital budget. There are various ways in which the town can fund its energy efficiency measures, including the competitive grants under the program, utility incentive programs, and financing for energy efficiency measures that can be funded through the related energy savings. This concern can be more fully addressed as the energy reduction plan is developed, as the plan will show whether there will be a significant funding need. However, in the unlikely event Upton loses its Green Communities designation by failing to meet its 20%/5-year energy reduction goal, it will not lose its previously-awarded grant funding and will reap the benefits of the installed energy efficiency measures.

The second concern was that the Fuel-Efficient Vehicle Policy required under the Green Communities program prohibits transferring a vehicle that does not meet the MPG requirements of the program between departments ("vehicle recycling,") which is a practice the town has used occasionally in the past to provide vehicles to departments that have low-mileage needs (the Town Manager's car is an example of this.) The

Committee recommends that the town adopt a Fuel-Efficient Vehicle Policy that meets the requirements of the Green Communities program in order to take advantage of the grants and energy savings under the program. We also recommend reviewing likely future vehicle recycling scenarios to see if they might be compliant (the vehicle likely to be recycled meets the fuel-efficiency standards,) and investigating other options for meeting low mileage vehicle needs with fuel-efficient vehicles. The Committee also recommends that we provide the Green Communities program with an analysis of the cost-effectiveness of recycling vehicles to low-mileage uses. The spirit of the program is cost-effective energy efficiency, so we expect a fair hearing of the proposal. The Green Communities program will also work with communities on a case-by-case basis should they encounter difficulty complying with their Fuel-Efficient Vehicle Policy due to a budget issue in a particular year.

The Committee recommends that the Board of Selectmen form an Energy Committee charged with completing, either directly or by working with the appropriate parties, the steps to be designated as a Green Community and the actions required after designation.

The Committee reiterates its recommendation that the town strive to apply for designation by October 30, 2014, the next deadline for an application to be designated a Green Community, so that it can take advantage of the grants and energy savings as soon as possible. In order to qualify for designation the town must:

- Adopt by a Town Meeting vote a zoning bylaw that permits as-of-right, in a designated location(s), at least one 250 kW ground-mounted solar photovoltaic array
- Create a plan to reduce energy use by 20% over a baseline year within 5 years
- Adopt by approval of the Board of Selectmen as Fuel Efficient Vehicle Policy
- Adopt by a Town Meeting vote a Stretch Energy Code general bylaw

The zoning bylaw and energy reduction plan have the longest lead times and should be started as soon as possible in order to qualify for Green Communities designation in 2014.

3.0 Summary of Documentation Required for Green Communities Designation

Documentation Required to Meet Criterion 1 – As-of-right Siting for Renewable/Alternative Energy Facility

- Brief description of the qualifying section of the bylaw or ordinance that identifies designated locations
- Color copy of the zoning map that shows area zoned
- Applicable sections of the zoning bylaw or ordinance
- Important zoning definitions
- Relevant section of the use table and any key that will help DOER interpret the use table
- Any related local regulations applicable to facilities sited under the bylaw/ordinance—such as site plan review regulations—so that DOER can confirm that the related local regulations are non-discretionary

Documentation Required to Meet Criterion 2 – Expedited Permitting

- A letter from municipal legal counsel affirming that nothing within the municipality's rules and regulations precludes issuance of a permitting decision within one year, along with the language addressing approval procedures and associated timing of any applicable bylaws/ordinances or regulations.
- A color copy of the applicable map(s) showing that the areas where the expedited permitting applies coincides with the as-of-right zoned areas for Criterion 1. If appropriate, this map may be the same as the map provided for Criterion 1.

Documentation Required to Meet Criterion 3 - 5-year/20% Energy Reduction Plan

The municipality must provide a copy of the Energy Reduction Plan for reducing energy consumption by 20 percent in five years across all municipal buildings, municipal vehicles, street and traffic lighting, drinking water and wastewater treatment plants, pumping stations and open spaces owned by the municipality. At a minimum, the Plan must include the following information:

- Identification of the inventory tool used
- Identification of the baseline year used
- The energy baseline, broken down by buildings, vehicles, water/sewer and streetlights.
- Specific energy conservation measures to be implemented to achieve reductions of at least 15 percent, the energy reductions to be achieved, the basis for the projected energy reductions, and a timeline with milestones to implement measures and achieve required energy reductions.
- *General strategies* to achieve 5 percent or less in energy reductions.
- Documentation that the municipal government has adopted the energy reduction plan.

Documentation Required to Meet Criterion 4 – Fuel Efficient Vehicle Policy

- Copy of the policy or other mechanism adopted for purchasing only fuel efficient vehicles
- Inventory of all vehicles (model, year, estimated MPG) with exempt/non-exempt status indicated.
- Replacement plan for non-exempt vehicles with fuel efficient vehicles
- Documentation that the municipality has adopted the fuel-efficient vehicle policy.

Documentation Required to Meet Criterion 5 – Stretch Energy Code

- Documentation of the town meeting vote adopting 780 CMR 115.AA, the MA Board of Building Regulations and Standards (BBRS) Stretch Energy Code. The vote must include the effective date of the Stretch Energy Code.

4.0 Executive Summary

The Green Communities Act of 2008 established the Green Communities Program, to be administered by the Green Communities Division of the Department of Energy Resources (DOER), under which communities that met the requirements set out in the act would qualify as Green Communities and would be eligible for technical and financial assistance, in the form of grants and loans, to be used to finance the costs of "studying, designing, constructing and implementing energy efficiency activities" and to "finance the siting and construction of renewable and alternative energy projects on municipally-owned land." As of the end of 2013, 123 communities had been designated Green Communities and over $20 million in grants had been awarded.

The criteria for qualifying as a Green Community are:

No	Criterion	Action Required to Meet Criterion
1	Provide for the as-of-right siting for <u>one</u> of the following: renewable or alternative energy generating facilities, renewable or alternative energy research and development facilities, or renewable or alternative energy manufacturing facilities in designated locations	Adopt an appropriate zoning bylaw at Town Meeting
2	Adopt an expedited application and permitting process under which these energy facilities may be sited within the municipality and which shall not exceed 1 year from the date of initial application to the date of final approval	Obtain letter from Town Counsel stating that the existing bylaws do not prevent a renewable or alternative energy project from being permitted within 1 year
3	Establish an energy use baseline inventory for municipal buildings, vehicles and street and traffic lighting, and put in place a comprehensive program designed to reduce this baseline by 20 per cent within 5 years of initial participation in the program	Determine baseline energy use and prepare a 5 year/20% energy reduction plan
4	Purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable	Adopt a Fuel Efficient Vehicle Policy
5	Adopt the Stretch Energy Code	Adopt the Stretch Energy Code as a general bylaw at Town Meeting. The Stretch Energy Code provides a more energy efficient alternative to the state's base energy code. It applies to new residential and commercial buildings, additions to commercial and residential buildings, and residential alterations and repairs.

Funding for the Green Communities Program is available, without the need for further appropriation, in a total amount of not more than $10 million from monies generated primarily by Regional Greenhouse Gas Initiative cap and trade auctions.

The Green Communities Designation Study Committee was charged with assessing the benefits, costs, opportunities and challenges associated with being designated a Green Community. In order to be designated, a community must meet the five criteria listed above established the Green Communities Act and by the Green Communities Division of the Department of Energy Resources.

In order to assess the benefits, costs, opportunities and challenges, the Committee:

- Met with Seth Pickering, the acting Green Communities Regional Coordinator for Upton, who gave a presentation on what Upton needs to do to be designated a Green Community and the benefits of the program to Upton
- Consulted with Ann Mazar, the Chair of the committee in Mendon responsible for its Green Communities program, on Mendon's experience with meeting designation criteria, applying for designation, administering the grant, and preparing the required reporting.
- Discussed program requirements and/or obtained information from Code Enforcement, Planning Board, Town Manager, Town Clerk, Police Chief, Fire Chief and DPW Director
- Talked with town representatives from Ashland, Lancaster and Needham about their experience with the Green Communities program
- Gathered information online from other municipalities, state and federal agencies, and other organizations

Assumptions

Criterion 1 – As-of-right siting for either renewable/alternative energy R&D facilities or renewable/alternative energy manufacturing facilities or renewable/alternative energy generating facilities

Members of the Committee met with the Planning Board, which expressed support for as-of-right siting in a designated location, for at least one 250 kW ground-mounted solar photovoltaic array (which requires about an acre) as the best option for Upton to meet this criterion. The Committee agrees and recommends that the town pursue this option.

Criterion 5 – Adopt the Stretch Energy Code

The Stretch Energy Code applies to both residential and commercial construction. However, since Upton has relatively little commercial construction activity and the general concerns about the Stretch Energy Code appear to be mostly about its impact on the construction of new houses, the assessment of the Stretch Energy Code in this document focuses on its application to new houses.

Benefits of Green Community Designation

Upton will benefit from Green Community designation by becoming eligible for an estimated $150,000 grant that will be awarded after designation and upon approval of a grant application for a cost and energy savings project proposed by Upton. Upton will also become eligible for future grants that are awarded on a competitive basis for additional cost and energy saving measures. The installation and implementation of the energy efficiency measures funded through the grants will reduce Upton's energy use and cost. The exact amount of the savings remains to be determined, but Mendon estimates that it will save $26K annually as a result of the measures funded through its initial grant. The net present value (5% discount rate) of a $150K grant and the annual energy cost savings of $20K related to the grant-financed energy efficiency measures is $278K over 10 years, $373K over 20 years and $431K over 30 years.

In addition, the measures taken to be designated a Green Community – reducing energy use by Upton's buildings and vehicles, reducing energy use by Upton's new homes over their life, and making it easier to build a solar energy generating facility - will contribute to reductions in greenhouse gas emissions. The Green Communities designation and grant program is a part of the state's overall effort to reduce greenhouse gas emissions to mitigate climate change. The state's goal is to reduce our greenhouse gas emissions to 25% below 1990 levels by 2020 and 80% below 1990 levels by 2080. The plan, known as the Massachusetts Clean Energy and Climate Plan, uses an integrated set of policies related to three major areas of greenhouse gas emissions: buildings, electricity supply and transportation. It also includes policies, such as the Green

Communities program, that are "cross-cutting" and a set of policies to address greenhouse gas emissions not related to producing energy (refrigerant emissions and emissions from plastic.)

Reducing greenhouse gas emissions may mitigate the impacts of climate change brought about by greenhouse gas emissions and reduce the economic costs of those impacts to Upton's citizens. Climate change impacts will likely include severe climate events, rising sea levels and other environmental and human health impacts that will affect Massachusetts, the United States and the rest of the world. Upton's citizens will likely bear some of the cost, not through the cost of energy, but through lost income, higher taxes, increased charitable donations, and higher insurance rates. Perhaps we can mitigate some of that cost by reducing greenhouse gas emissions now by taking the measures required to be a Green Community. Upton's contribution to reducing greenhouse gas emissions will be a small part of a worldwide effort, but achieving meaningful reduction in global greenhouse gas emissions will require the action of many. It is possible that Upton's designation as a Green Community, along with the 123 that have been designated so far, will inspire other communities to seek designation and that we will benefit from their greenhouse gas emission reductions.

Upton may also benefit from the 42,000 to 48,000 jobs in the clean energy and energy efficiency fields that the state projects will be created by 2020 through its plan to reduce greenhouse gas emissions. Making the effort to become designated a Green Community will likely accelerate Upton's efforts to reduce its energy use and cost.

Cost of Green Community Designation

There are several efforts/costs associated with meeting the requirements to be designated a Green Community:

- Drafting zoning by-law changes
- Legal costs associated with the review of zoning by-law changes and a legal opinion on the duration of Upton's permitting process
- Holding a public hearing on the proposed changes to the zoning by-law
- Collecting and entering baseline energy use data
- Creating a plan to reduce energy use by 20% over 5 years
- Holding informational meetings
- Preparing the designation application
- Preparing the grant proposal for the energy efficiency measures (Note: due in January 2015 if Upton is designated in 2014)
- Acquiring and implementing the energy efficiency measures
- Tracking grant expenditures
- Updating the energy use database
- Preparing quarterly and annual reports

We expect that the out-of-pocket costs will be legal expenses, the expense of providing notice for the hearing, and any costs associated with holding informational meetings. Volunteers will likely perform the rest of the tasks.

The grant agreement requires that Upton report regularly on grant spending, the progress of any as-of-right solar photovoltaic installations, energy use and progress towards achieving the 20% goal, fuel-efficient vehicle acquisition, and assurance that Upton is following the Stretch Energy Code. $10,000 of the grant can be used to cover the cost of meeting the reporting requirements, and it is possible that Upton may be able to share the cost of a program administrator with other communities. It is also possible for the program administration to be done by volunteers.

Failure to meet the Green Community designation requirements, either the elements described above or the reporting requirements, may lead to loss of the designation and loss of eligibility for the competitive grants.

Other Green Community Designation Issues

Criterion 1: As-of-right Siting in Designated Location for Ground Mounted Solar Photovoltaic Array

Upton may be giving up some control over land use by adopting as-of-right siting, in a designated location, for at least one 250 kW ground-mounted solar photovoltaic array. Members of the Committee met with the Planning Board, which supported designating an area(s) in Upton where a ground-mounted solar photovoltaic array(s) of at least 250 kW would be allowed as-of-right. The designation criterion requires that at least enough land for one 250 kW array be designated, which is about an acre. The Committee believes that in working with the Planning Board, and using information in the state's "Question and Answers: Ground Mounted Solar Photovoltaic Systems," information in DOER's annotated version of its model bylaw and information from other sources, we can identify an area(s) where solar array(s) would be an appropriate as-of-right land use. The impact of any such facility can also be minimized through pre-determined setbacks and through site plan review. The Committee also notes that state law may already permit solar energy generating facilities by right.

Criterion 2: Expedited Permitting for Solar Photovoltaic Array

The Committee believes the town's existing permitting processes meet the expedited permitting requirement.

Criterion 3 - Energy Reduction Plan

Reducing energy use by 20% over 5 years could require Upton to pay for some of the energy efficiency measures, which has not been budgeted in the Capital Improvement Plan. If Upton were unable to fund the energy efficiency measures, either through grants, other means, or the town budget, and it could not meet the 20% target in 5 years, it could lose its Green Community designation, which would cause it to become ineligible for the competitive grants. It would, however, continue to reap the benefits of the energy efficiency measures that had already been implemented. It would not be required to return any grants previously awarded. Upton does not commit any funds as a result of the designation. The capital needs, if any, of the 20%/5-year energy reduction plan will be better understood after the energy reduction plan has been completed.

Criterion 4: Fuel Efficient Vehicle Policy

The Fuel-Efficient Vehicle Policy required by the Green Communities program prohibits transferring vehicles that do not meet the fuel-efficient MPG standards between departments. It would have, for example, prohibited transferring the Police Department's vehicle to the Town Manager. Per the Town Manager, vehicle recycling happens occasionally where it makes sense economically. For example, the Animal Control vehicle gets relatively low use so it does not make sense to buy a new vehicle for that department. Since the cost of complying with the no recycling policy will be significantly less than the grant and energy-saving benefits of the Green Communities program, the Committee believes that the town should adopt the Fuel-Efficient Vehicle Policy and investigate ways to cost-effectively comply with the no-recycling policy. The Committee also recommends that we provide the Green Communities program with an analysis of the cost-effectiveness of recycling vehicles to low-mileage uses. The spirit of the program is cost-effective energy efficiency, so we expect a fair hearing of the proposal. We also note that DOER will work with a municipality if it has trouble complying their fuel-efficient vehicle policy due to a budget issue in a particular year.

Criterion 5: Stretch Energy Code

The Committee expects that the existing Stretch Energy Code will be changed so that it continues to be a "stretch" from the new base energy code. The state has a new base energy code that becomes mandatory on July 1, 2014[1] for communities that have not adopted the Stretch Energy Code. The new base energy code and the existing Stretch Energy Code will result in new houses that are about as efficient as one another. Construction costs can be expected to be similar as well. The Board of Building Regulations and Standards, which is responsible for the state's building codes, is likely to change, with input from DOER, the Stretch Energy Code so that it maintains its "stretch."

The Committee does not know how the existing Stretch Energy Code will change, though, based on a conversation with the town's Green Communities Regional Coordinator and others, cost effectiveness is one of the criteria that will be used to evaluate any proposed changes to it, so it is likely that any changes will be cost effective. If it is possible to wait until the changes to the Stretch Energy Code are known, and still submit the application for designation by October 30, 2014, then the Committee recommends the town wait until the changes are known to submit the Stretch Energy Code to Town Meeting. If not, the Committee recommends that the town bring the Stretch Energy Code to Town Meeting before the changes are finalized (we believe/hope that at least a general framework for the changes will be known by the Annual Town Meeting.) The Committee believes that it will be beneficial to the town to apply for Green Communities in 2014 in order to take advantage of the grants and energy savings as soon as possible. It will also allow the town to include energy reductions related to the renovation of Town Hall in the energy reductions counted towards meeting the 20%/5-year energy reduction plan.

The Committee believes there are reasonable offsetting arguments to objections raised by opponents of the Stretch Energy Code. The Home Builders Association of Massachusetts raised the following concerns about the Stretch Energy Code: any increase in first cost associated with building to the Stretch Energy Code would prevent some homebuyers from qualifying for a mortgage for those houses; two energy codes, coupled with the three-year update cycle of the energy codes, is an unfair burden on builders and also adds a training burden on Code Enforcement staff; and any energy efficiency measures that are more stringent than those in the base energy code should be optional – not mandated under a more stringent code.

In response to the concern about affordability, the Committee notes that energy savings may enhance affordability and that there are mortgage programs that take into account energy savings. In the case of consumer choice, another view of the situation is that it is appropriate for a community to choose to reduce the environmental impact of buildings in the community, especially in light of the fact that they are long-lived assets that will impact the community for years to come. We also note that when houses are built in anticipation of finding a buyer upon completion without above-base code energy efficiency measures, the buyer does not have a choice for those energy efficiency measures. In response to the concern about the burden on builders and Code Enforcement staff, the Committee notes that because 133 communities have adopted the Stretch Energy Code (the number of communities that have adopted the Stretch Energy Code, 133, is greater than the number of communities designated Green Communities, 123, as communities have to adopt the code before they are designated,) it is likely that many builders now have significant experience with both energy codes and that there is effective Stretch Energy Code training and support for builders and code enforcement staff. DOER also offers resources for training code enforcement staff. The Committee did not find any data that indicate that the adoption of the Stretch Energy Code has had a negative impact in any of the communities where it has been adopted.

[1] The Board of Building Regulation and Standards, which is responsible for the state building codes, adopted a new base energy code last July. Until July 1, 2014 builders in communities that have not adopted the Stretch Energy Code can opt to use either the old or new base energy code. The new base energy code becomes mandatory on July , 2014. Communities that adopted the Stretch Energy Code continue to use that energy code.

Recommendations

The Committee recommends that the town pursue Green Communities designation. It believes that the tangible benefits, such as the grants available under the program and cost savings from energy efficiency measures funded with the grants, outweigh the tangible costs, such as legal and administrative expenses. The Committee also believes the town will benefit from participating in the state's effort to reduce greenhouse gas emissions. The Green Communities program is part of the state's plan to reduce greenhouse gas emissions to 25% below 1990 levels by 2020. The state forecasts that its plan will help mitigate the impact of air pollution and climate change, reduce dependence on outside sources of energy, and create 42,000 to 48,000 clean energy/energy efficiency jobs by 2020.

The Committee recommends that the town apply for designation in 2014 (the application is due by October 30th) as this will allow the town to take advantage of the grants and energy savings as soon as possible, and allow it to count any energy reductions associated with the Town Hall renovation towards the 20% energy reduction goal in the 20%/5-year energy reduction plan.

As noted that the state's existing Stretch Energy Code is likely to change, and the changes are expected to be reasonable and cost-efficient. If it is possible to bring the Stretch Energy Code to Town Meeting after the changes to it are determined, and still meet the October 30th deadline to apply for Green Communities designation, the Committee recommends that the town wait until the changes are determined. If it is not possible to wait until the changes are determined, and still apply for designation in 2014, then the Committee recommends the Stretch Energy Code be brought to Town Meeting before the changes are determined.

The Committee recommends that the Board of Selectmen create an Energy Committee charged with, either by the action of its members or by working with the appropriate parties, applying for Green Communities designation and administering the Green Communities program after designation.

The following sections list the activities that will need to be completed to apply for Green Communities and those that will need to be completed after designation.

Activities Associated with Applying for Designation

Energy Committee will work with Planning Board to:
- Draft zoning by-law changes
- Create FAQs
- Assist, if requested, in preparation of "expedited permitting" letter by Town Counsel

Planning Board will:
- Finalize zoning by-law changes
- Confirm with Green Communities Division of DOER that proposed by-law meets conditions for Green Community designation
- Hold public hearing
- Arrange for changes to be included on town meeting warrant
- Read motion at Town Meeting
- Assist in preparation of "expedited permitting" letter by Town Counsel

Energy Committee will:
- Enter baseline energy use data into data collection tool
- Coordinate creation of 20%/5-year energy use reduction plan

- Provide Town Manager with model Fuel Efficient Vehicle Acquisition Policy and model Stretch Energy Code town meeting warrant article. Town Manager will work with Board of Selectmen on adoption of the fuel-efficient vehicle policy and putting the Stretch Energy Code article on the town meeting warrant.
- Work with Town Manager to complete application for Green Community designation by October 30, 2014
- Hold informational meetings as needed prior to Town Meeting votes on adoption of zoning by-law changes and adoption of the Stretch Energy Code

Activities Associated with Administering the Program

Energy Committee and/or Town Manager will:

- Complete a grant application by January 21, 2015.
- Sign and return the grant award documents
- Get bids for materials and services
- Contract with suppliers
- Arrange for installation/service
- Pay suppliers
- Report on how the money was spent
- Complete quarterly and annual reporting
    - Update energy use database
    - Report on energy use, fuel-efficient vehicle acquisition, adherence to "stretch" code, status of solar energy generation facility projects, status of permitting

The following section shows a timeline for the required activities.

5.0 ACTION PLAN

Yr	Mo	Green Communities (GC) Activities	As-of-right Siting in Designated Location	Expedited Permitting	Energy Reduction Plan	Fuel Efficient Vehicle Policy	Stretch Energy Code
14	Jan		Draft zoning bylaw for as-of-right solar PV		Enter baseline energy use data into Mass Energy Insight (MEI)	Finalize vehicle inventory	
	Feb					Analyze impact of "no recycling" under Fuel Efficient Vehicle Policy	Analyze cost-effectiveness of new Stretch Energy Code
	Mar						
	Apr	Hold GC informational meeting	Hold public hearing				Hold informational meeting
	May		Town Meeting votes on changes to Zoning Bylaw				Town Meeting votes on Stretch Energy Code
	Jun						
	Jul			Town Counsel prepares expedited permitting letter	Draft 20%/5-year energy reduction plan (ERP)	Draft & adopt Fuel Efficient Vehicle Policy	Provide Stretch Energy Code training to Code Enforcement
	Aug						
	Sep						
	Oct	Submit application GC designation by 30th			Submit ERP to BoS/Town Manager for approval		
	Nov						
	Dec						
15	Jan	Submit application for initial GC grant by 21st					Stretch Energy Code effective January 1
	Feb						
	Mar	Acquire energy efficiency measures & track grant spending			Implement grant-funded ERP measures		
	Apr				Enter energy use data into MEI (on-going)		
	May						
	Jun						
	Jul						
	Aug						
	Sep						
	Oct	Prepare annual report					
	Nov						
	Dec						

5.0 ACTION PLAN

Yr	Mo	Green Communities (GC) Activities	As-of-right Siting in Designated Location	Expedited Permitting	Energy Reduction Plan	Fuel Efficient Vehicle Policy	Stretch Energy Code
16	Jan	Submit application for GC competitive grant by 21st			Identify next round of efficiency measures to implement		
	Apr						
	Jul	Acquire energy efficiency measures & track grant spending			Implement next round of energy efficiency measures		
	Oct	Prepare annual report			Complete implementation of energy efficiency measures		
17	Jan						
	Apr						
	Jul						
	Oct	Prepare annual report					
18	Jan	Submit application for GC competitive grant by 21st			Identify next round of efficiency measures to implement		
	Apr						
	Jul	Acquire energy efficiency measures & track grant spending			Implement next round of energy efficiency measures		Changes to Stretch Energy Code effective July 1 (estimated)
	Oct	Prepare annual report			Complete implementation of efficiency measures		
19	Jan						
	Apr						
	Jul						
	Oct	Prepare annual report					
20	Jan						
	Apr						
	Jul						
	Oct	Prepare annual report					

6.0 DETAILED DESCRIPTION AND DISCUSSION OF CRITERION 1: AS-OF-RIGHT SITING FOR RENEWABLE ENERGY/ALTERNATIVE ENERGY FACILITIES

A municipality must provide zoning in designated locations for the as-of-right siting for one of the following:

1. Renewable or alternative energy generating facilities; or
2. Renewable or alternative energy research and development (R&D) facilities; or
3. Renewable or alternative energy manufacturing facilities

Notes:

- As-of-right siting provides for the allowed use without unreasonable regulation. More specifically, as-of-right siting means that development may proceed without the need for a special permit, variance, amendment or other discretionary approval. As-of-right development may be subject to non-discretionary site plan review to determine conformance with local bylaws as well as state and federal law. As-of-right development projects that are consistent with local zoning bylaws and with state and federal law cannot be prohibited.

- An applicant can meet this requirement by providing as-of-right siting for any one of the three types of facilities listed above.

- If a community has as-of-right siting in place for R&D and/or manufacturing facilities in general, this can meet the requirement. The community must demonstrate that the zoning bylaw applies to renewable and alternative energy R&D or manufacturing.

- Communities can select specific locations for as-of-right siting of these facilities. These locations must be feasible and practical. For example, locations for wind are required to have adequate wind resources, biomass combined heat and power (CHP) locations are required to have sufficient thermal load, and large-scale ground-mounted photovoltaic installations must have adequate space.

- If providing as-of-right siting for a renewable or alternative generation facility, the community must select technology that is practically available and provides a realistic opportunity for generation. It is expected that a community will appropriately utilize its available renewable resources, and this will be taken into consideration in review of an application meeting this requirement.

- As-of-right zoning bylaws can apply appropriate standards that protect public health and safety and provide for non-discretionary site plan review. Reasonable environmental performance standards per the developed bylaw may be incorporated into the site plan review process (e.g. height, setback, etc.), but cannot be so stringent as to make the use infeasible. The key is the site plan review must be truly non-discretionary – i.e., if the standards and zoning requirements are met, the project can be built. This is distinct from a special permit, in that the special permit may be denied if the Planning Board or other permit granting authority is not satisfied with the project.

- An applicant can meet this requirement with as-of-right siting for renewable or alternative energy generation with any one of the following project requirements:
    - On-shore Wind – a turbine of a minimum 600-kilowatt in size or above
    - Offshore Wind – a turbine of a minimum 2.5 megawatt or above
    - Solar Photovoltaic – a single ground-mounted system of a minimum of 250 kilowatt or above
    - Biomass CHP – a minimum of 5 megawatts in a stand-alone building

- Alternatively, if providing as-of-right siting for R&D or manufacturing facilities, a municipality's zoning must specify as an allowed use construction of one of the following facilities:

    - Research and Development Facilities are those used primarily for research, development and/or testing of innovative information, concepts, methods, processes, materials, or products. This can include the design, development, and testing of biological, chemical, electrical, magnetic, mechanical and/or optical components in advance of product manufacturing. The accessory development, fabrication, and light manufacturing of prototypes, or specialized machinery and devices integral to research or testing may be associated with these uses.

    - Manufacturing Facilities are those used primarily for heave or light industry or the manufacture or assembly of a product including processing, blending, fabrication, assembly, treatment and packaging.

- Additionally, in order to qualify, the as-of-right siting for R&D or manufacturing must clearly allow renewable or alternative energy activities defined as follows. The expectation is that the municipality will allow for all of the technology areas listed below. Given adequate justification, the Division may permit exclusion of a particular technology:

    Renewable Energy
    - Solar-photovoltaic (PV) or thermal
    - Wind
    - Biomass power conversion or thermal technologies, including R&D related to, or the manufacture of, wood pellets
    - Ultra-low emissions, high-efficiency wood pellet boilers and furnaces
    - Low-impact hydro – electric and kinetic
    - Ocean thermal – wave or tidal
    - Geothermal
    - Landfill gas
    - Fuel cells that use renewable energy
    - Advanced biofuels

    Alternative Energy
    - Combined heat and power
    - Electric and hydrogen powered vehicles and associated technologies, including advanced batteries and charging stations

Documentation Required to Meet Criterion 1

- Brief description of the qualifying section of the bylaw that identifies designated locations
- Color copy of the zoning map that shows area zoned
- Applicable sections of the zoning bylaw
- Important zoning definitions
- Relevant section of the use table and any key that will help DOER interpret the use table
- Any related local regulations applicable to facilities sited under the bylaw – such as site plan review regulations – so that DOER can confirm the related local regulations are non-discretionary
- For renewable energy or alternative energy R&D or manufacturing facilities only: Yield calculations, either in the text of the letter provided by legal counsel or attached
- If meeting the criterion through existing bylaws, letter from legal counsel certifying that the existing bylaws

Discussion

Upton's existing zoning bylaw does not provide for as-of-right siting for any of the renewable or alternative energy facilities specified under this criterion. These are the as-of-right uses allowed under the existing zoning bylaw:

Use	SRA	SRB	SRC	SRD	AR	GB	C&I	MGF
One-family house	Y	Y	Y	Y	Y			
Farm, orchard, nursery or similar use of land for raising crops, < 5 acres	Y	Y	Y	Y	Y	Y	Y	
Use of land for religious or educational purposes by state, religious sect or non-profit educational corporation	Y	Y	Y	Y	Y	Y	Y	
Non-profit museum, art gallery or community center						Y	Y	
Municipal buildings and uses	Y	Y	Y	Y	Y	Y	Y	Y
Municipal recreation or water supply	Y	Y	Y	Y	Y	Y	Y	Y
Child care facility	Y	Y	Y	Y	Y	Y	Y	
Retail stores						Y	Y	
Personal services						Y	Y	
Eating establishments						Y	Y	
Business or professional office						Y	Y	
Showroom for wholesale establishments						Y	Y	
Funeral home						Y	Y	
Privately owned electrical substations (not including power plants) that are intended to serve specific areas of town								Y

The only use that is currently addressed in Upton's zoning by-law that may meet the requirements for Green Communities designation is "Plant for light manufacturing or packaging," to the extent that it would permit the development of either a renewable or alternative energy manufacturing facility or a renewable or alternative energy R&D facility. Under the existing zoning by-law a light manufacturing or packaging plant is only allowed in the Commercial and Industrial zone and it would require approval of a special permit by the Zoning Board of Appeals.

As such, Upton will have to amend its zoning bylaw to make at least one of the uses listed by the DOER "as-of-right."

Members of the Committee met with the Planning Board, which supported modifying the zoning bylaw to permit the as-of-right siting in a designated location for at least one large-scale (250 kW (DC) or greater) ground mounted solar photovoltaic installations (they are otherwise interested in developing a comprehensive solar energy zoning bylaw.) The designation criterion requires that at least enough land for one 250 kW array (about one acre) be so designated. The Committee believes that in working with the Planning Board we can identify an area(s) where large-scale ground-mounted solar array(s) would be an appropriate as-of-right land use. The impact of any such facility can also be minimized through pre-determined setbacks and through site plan review. The state has published a "Question & Answers: Ground-Mounted Solar Photo-Voltaic Systems" and DOER has provided an annotated version of its model solar bylaw to help communities with siting ground

mounted solar photovoltaic systems. The Committee also notes that state law may already permit solar energy generating facilities by right.

To comply with this criterion, Upton will need to:

- Determine which use to make "as-of-right," what zoning districts or overlay districts to allow the use in, and whether or not to add or change any site plan/dimensional requirements
- Draft changes to zoning by-laws for use, location, and site plan/dimensional requirements
- Hold a public hearing Place an article on the warrant for the by-law changes
- Hold informational meetings on Green Community designation and required changes
- Vote on article by Town Meeting (requires 2/3 approval)
- Submit approved bylaw changes to Attorney General for approval
- Implement changes to zoning bylaws (i.e., train Building Inspector, establish site plan review process, and update electronic permitting system)
- Provide any reporting required by the Green Communities Division

Resources needed:

- Planning board time – discuss different uses, locations, and site plan requirements
- Drafting time (note: likely able to use by-laws already approved by other communities as a starting point)
- Legal review of proposed changes to zoning bylaws
- Cost of advertising hearing

Issues:

Must ensure as-of-right locations address abutter/citizen concerns. Abutter/citizen concerns will be addressed through:

- The Planning Board must hold public hearings on proposed zoning bylaw additions/changes so abutter/citizen concerns about proposed as-of-right sites can be addressed.
- Solar photovoltaic installations do not produce significant noise or harmful emissions.
- Installations are subject to reasonable regulations requiring site plans.
- Any change to the zoning bylaw requires a 2/3 majority.

An "as-of-right siting" condition applied to a solar overlay district may be considered inequitable.

- Installations are not necessarily prohibited in other locations but will require Planning Board or Zoning Board of Appeals approval.

DOER Notes on Solar Photovoltaic Installations

In order to satisfy the Green Communities Act as-of-right zoning requirement, Upton's zoning must allow, in designated locations, solar photovoltaic installations that utilize ground-mounted systems which individually have a rated name plate capacity of 250 kW (DC) or more.

- A solar photovoltaic array with a rated nameplate capacity of 250 kW (DC) occupies approximately one acre of land.

Designated location is a location designated in accordance with Massachusetts General Laws Chapter 40A, section 5, where ground-mounted large scale solar photovoltaic installation may be sited as-of-right.

- Locations may be designated by reference to geographically specific districts. An overlay district consisting of all or portions of multiple preexisting zoning districts, where large-scale solar photovoltaic power generation is permitted by right, can also be created.

- DOER strongly discourages designating locations that require significant tree cutting, because of the important water management, cooling and climate benefits trees have, and encourages designating locations in industrial and commercial districts, or on vacant, disturbed land.

- The designated location must provide a realistic and practical opportunity for development of a large-scale solar photovoltaic power generation facility. In designating locations Upton should take into account the availability of sunlight and the particular characteristics of our community.

- DOER encourages designating locations in industrial and commercial districts, or on vacant, disturbed land.

The bylaw can also include these provisions (taken from DOER's model bylaw):

- **Compliance with Laws, Ordinances and Regulations.** Construction and operation of proposed large-scale ground-mounted solar facilities must be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, environmental, and electrical requirements.

- **Building Permit and Inspection.** All large-scale ground-mounted solar facilities must first obtain a building permit and work must then commence within 6 months (per state building code laws), extensions may be requested and granted multiple times.

- **Fees.** The fee required for a building permit.

- **Setbacks.** The model ordinance suggests front, side, and rear-set backs of between 10 to 25 feet in typical situations, but at least 50 feet when the property borders residential and/or conservation-recreation districts.

- **Signs and Lighting.** Lighting should comply with local, state, federal laws and should be designed to minimize lighting pollution. Signs should comply with local sign laws and include the owner of the project and provide an emergency contact phone number.

- The DOER model bylaw also includes provisions regarding emergency management, solar facility removal requirements, abandonment, project financial surety, and liability insurance.

- The model bylaw also lists documents required for the site plan review, including a location map, a site plan, landscape plans, operation and maintenance plans, and all relevant compliance documents (such as building permits and approvals.)

State Law Relating to Solar Energy Systems

Existing Massachusetts law largely exempts solar photovoltaic installations from local zoning restrictions. Massachusetts General Laws ***Chapter 40A, Section 3***, provides, in relevant part, that:

> *"No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare."*

In view of M.G.L. ch. 40A § 3, local zoning provisions specifically allowing for the as-of-right construction of smaller solar energy systems – such as those commonly installed on top of or on the lot of a home or business—are unnecessary. However, it is not clear whether M.G.L. ch. 40A § 3 applies to the construction of large-scale ground-mounted systems. Therefore, to qualify as a Green Community, a municipality may adopt a solar photovoltaic bylaw for as-of- right siting of large-scale ground-mounted systems in a designated location(s).

K&P advises that towns may subject solar energy facilities to special permitting, but the "no zoning … by-law shall … unreasonably regulate" language of the solar energy provision would likely be interpreted to limit discretion of the special permit granting authority to deny a special permit only when it finds specific facts that such denial is "necessary to protect the public health, safety or welfare." Site plan review, however, can be used to regulate, but not to prohibit, a solar energy system or facility.

7.0 DETAILED DESCRIPTION AND DISCUSSION OF CRITERION 2: EXPEDITED PERMITTING

Expedited Permitting Process

Criterion Two of the Green Communities Program requires aspiring Green Communities to adopt an expedited application and permitting process under which as-of-right energy facilities (criterion #1) may be sited within the municipality. To qualify, the expedited process may not exceed one year from the date of initial application to the date of final approval. Expedited permitting is accomplished by providing a transparent and efficient process for municipal permitting by boards relevant to the project.

Such an expedited application and permitting process applies only to the proposed facilities, which are subject to the as-of-right siting provisions. In addition, municipalities must document that all permits necessary to site proposed facilities can be issued within the one-year deadline.

To meet this criterion, municipalities must have rules and regulations in place governing permit issuance such that all local permitting decisions applicable to the siting and construction of clean energy facilities within the relevant zoning district can be issued within one year of submission of a completed application. In regard to documentation, municipalities will have already demonstrated that they have by-right zoning allowing clean energy facilities (criterion #1). Thus, communities need to show that other provisions of the zoning (e.g. site plan review), as well as other local regulations, allow permitting within one year.

In order to document compliance with the Green Communities expedited permitting criterion municipalities must provide DOER with a letter from legal counsel affirming that nothing within the municipality's rules and regulations precludes issuance of a permitting decision within one year, along with the language addressing approval procedures and the associated timing of any applicable bylaws/ordinances or regulations.

Municipalities should also be aware that, once designated as Green Communities, they will be required to report annually on their permitting of clean energy projects within as-of-right zoning districts, including documentation of adherence to the 365-day permitting requirement.

Documentation Required to Meet Criterion 2

- A letter from municipal legal counsel affirming that nothing within the municipality's rules and regulations precludes issuance of a permitting decision within one year, along with the language addressing approval procedures and associated timing of any applicable bylaws/ordinances or regulations.

- A color copy of the applicable map(s) showing that the areas where the expedited permitting applies coincides with the as-of-right zoned areas for Criterion 1. If appropriate, this map may be the same as the map provided for Criterion 1.

Discussion

How does zoned expedited permitting affect Upton?

If by-right zoning (criterion # 1) is established for clean energy facilities to be sited in Upton the town must adopt an expedited permitting process which would apply specifically to clean energy facilities within the designated 1+ acre zone.

To qualify, the expedited process may not exceed one year from the date of initial application to the date of final approval. This requirement is not expected to impose any undue burden on the Planning Board or other permitting boards.

Unless extensions are granted, most projects should take no more than 180 days to permit.
Extensions may be allowed with agreement between the applicant and the reviewing board.

Municipalities must have rules and regulations in place governing permit issuance such that all local permitting decisions (i.e., formal determinations, orders of conditions, licenses) and a letter from town counsel stating that nothing in our current by-laws and regulations stands in the way of expedited permitting and would not cause permitting to take more than 365 days.

The expedited process would only apply to construction of facilities for R&D and production of clean energy. As-of-right development may be subject to non-discretionary site plan review to determine conformance with local zoning bylaws.

If Upton is designated a Green Community, an annual report will need to be submitted regarding any clean energy facility projects that have been permitted including their timelines to show that the town is complying with the requirements of the expedited permitting process.

To comply with this criterion, Upton will need to:

Demonstrate that we can meet the one-year permitting deadline. To date, no known project in Upton has taken as long as one year to permit and most are processed within six months. Where explicitly stated in the bylaws, the approval time for special projects ranges from 60-180 days.

For a bylaw change the Planning Board must hold a hearing and a warrant article must be put to a vote at a town meeting. The Planning Board must also give a recommendation at town meeting; the article requires a 2/3 vote in favor and documentation of the vote must be submitted.

A letter from town counsel stating that nothing in our current by-laws and regulations stands in the way of expedited permitting and would not cause permitting to take more than 365 days. The letter should address approval procedures and timing of any applicable bylaws/ordinances or regulations.

Pros:
- No special permit needed
- Streamlined for applicant
- Efficient for applicant

Cons:
- Commits Planning Board (and other boards) to processing within 365 days (not a likely issue).
- Time needed to write annual report for DOER
- Cost incurred for town counsel to write the letter described above.

Conclusion:
Expedited permitting would not place an undue burden on town boards or committees as there is little that would change from Upton's current method of operating to meet Criterion #2.

8.0 DETAILED DESCRIPTION AND DISCUSSION OF CRITERION 3: BASELINE ENERGY USE AND ENERGY REDUCTION PLAN

Criterion Three for Green Communities Designation requires that a municipality (including both the general government and school district):

1.) **Establish an energy use baseline** (inclusive of all divisions and departments, all municipal buildings, school buildings, municipal and school vehicles, street and traffic lighting, drinking water and wastewater treatment plants, pumping stations and open spaces[1] owned by the municipality) and,

2.) **Put in place a comprehensive program designed to reduce this baseline by 20% within the 5-year period following the Baseline Year.** For example, applicants using a calendar year 2011 baseline must reduce their total energy use by 20% by the end of 2016. The 20% reduction is applied to the aggregate energy use in the baseline energy use inventory.

Feasibility

Presently, energy use data for the town are not aggregated in a centralized database. Rather, each building or entity has a different account. Additionally, not all assets use the same mix of energy; some use natural gas while others rely on oil. Notwithstanding, these data could be collected. The impact on staff time would likely be minimized by building linkages between free data collection and analysis software such MassEnergyInsight and the large-scale utility companies that provide the majority of the town's energy utilities (NStar and NationalGrid).

Demonstrating a realistic path in the Energy Reduction Plan will require larger conversations on financing the various measures required to reach a 20% reduction. While previous and current energy reduction projects in town will assist in reaching the goal, new initiatives need to be vetted and the costs of those measures need to be mapped out. Activities in the town's capital plan need to be cross-referenced. The availability of federal, state, and utility-based energy efficiency incentives needs to be approached with an investment-grade looking glass. Other opportunities for discussion include the use of the Green Community Grant as a potential funding source as well as explorations of off balance sheet financing and other tools readily brought to bear by energy service companies.

Criterion #3 in Detail

This section provides key details for the guidance document on the two requirements under criterion three.

Requirement #1 - Establish a Baseline

In establishing the baseline, the town has some flexibility in defining which assets to include. A general strategy supports the inclusion of an asset if the town wishes to claim related energy reductions.

- Divisions and departments operating as Enterprise Funds under MGL Chapter 44, Section 53F ½ where such services are provided by a third party contractor or where the sole operating and budget authority resides with a board or commission) **may be excluded from the Energy Reduction Plan.** However, these operations are encouraged to become a part of and to adopt the Energy Reduction Plan. The exclusion does not apply to any other existing or future division or department operating as an Enterprise Fund for which the City has direct authority over its operation.

[1] The "Open Space" category includes energy use by parking lots, parks, cemeteries and athletic fields.

- If a municipality pays the energy bills for an asset it does not own, it **may elect to include that asset in its baseline if it would like to claim credit for any of that asset's energy reductions.** For example, towns frequently pay the energy bills for streetlights owned by their utility or for buildings owned by a historical society.

- The energy use baseline inventory should be provided on an MMBtu (Million British Thermal Units) basis. There are a number of acceptable tools for performing the inventory including:
    a. DOER's MassEnergyInsight (MEI) (www.massenergyinsight.net)[1]
    b. Energy Star Portfolio Manager
    b. ICLEI software
    d. Other tools proposed by the municipality and deemed acceptable by DOER

- The baseline year should consist of the most recent year of complete data. For applications in the fall of 2013, this should be Fiscal Year 2013 (or Calendar Year 2012). **However, to allow communities to take credit for energy efficiency measures completed in recent years, a municipality may provide a baseline that goes back as far as FY 2011 (or CY 2011), and provide a reduction plan that begins in FY 2012 (or CY 2012)**

- **Public School Districts** - For a municipality to meet this requirement, its public school district must be included in the municipality's baseline. Furthermore, the public school district must provide a letter from the Superintendent of Schools stating that is has adopted the Energy Reduction Plan.

- **Regional School Districts** – Regional School Districts **are not required to be part of a municipality's Green Communities designation application**. However, for regional school districts that wish to be part of a municipality's Green Communities designation (with approval by the municipality), the regional school district must establish an energy use baseline and assign the appropriate percentage of that baseline to the municipality (based on the funding assessment percentage that municipality contributes annually to the regional school district). The regional school district must also adopt the Energy Reduction Plan. A municipality may also include its local elementary school that is part of a RSD, but not include its portion of the middle and/or high schools. In this case, 100% of the elementary school's energy use would be included in the Energy Reduction Plan.

Documentation for Requirement #1

- Identification of the inventory tool used
- Identification of the baseline year used
- The energy baseline, broken down by buildings, vehicles, water/sewer and streetlights.

Requirement #2 – Develop a 20% Energy Reduction Plan

- **Create an Energy Reduction Plan (ERP) to document both the baseline energy consumption and the comprehensive program to reduce total energy use by 20%.** An ERP is a document that requires thoughtful planning and participation by all municipal departments, including schools. Municipalities should plan on at least three months to complete the process of producing an ERP. A team of individuals and a designated lead responsible for conducting the baseline inventory and developing the ERP should be identified. The process will involve collecting data using one of the tools identified

[1] Preferred method

above, analyzing the data to understand where reductions can be achieved, setting goals and developing strategies based on data collection and analysis, and finally developing and writing the ERP.

A well-prepared ERP will provide a realistic path for implementation. The benefits of ERP implementation include long-term savings in annual energy costs and reductions in a municipality's greenhouse gas emissions. It also presents an opportunity to perpetuate these benefits if a portion of the cost savings is re-invested in further energy efficiency. Finally, the ERP is an opportunity to engage the community in municipal energy reduction, both in its design and implementation and in publicizing its successes.

- **Report annually on the ERP.** If at the end of 5 years a municipality has not reduced its energy consumption by 20%, it will be asked to provide justification for not fulfilling its ERP. If a municipality can demonstrate that it has done everything reasonably achievable to obtain the reductions, then no further action will be required. If the municipality does not effectively demonstrate why it has not reduced its consumption by 20%, then the municipality is at risk of losing its Green Community designation. A municipality will not lose its previously-awarded grant funding as a result of not meeting its 20% energy reduction goal.

Documentation for Requirement #2

- Specific energy conservation measures to be implemented to achieve reductions of at least 15 percent, the energy reductions to be achieved, the basis for the projected energy reductions, and a timeline with milestones to implement measures and achieve required energy reductions.
- General strategies to achieve 5 percent or less in energy reductions.
- Documentation that both the municipal government and local school district have adopted the energy reduction plan. If a regional school district is included as part of the designation, documentation that the regional school district has adopted the plan must be included.

9.0 DETAILED DESCRIPTION AND DISCUSSION OF CRITERION 4: FUEL EFFICIENT VEHICLE POLICY

In order to fulfill Criterion Four of the Green Communities Program, Upton by action of the Board of Selectmen/Town Manager must adopt a written Fuel-Efficient Vehicle Policy that requires municipal departments to purchase only fuel-efficient vehicles whenever such vehicles are commercially available and practicable. A model version of a Fuel Efficient Vehicle Policy is attached as Appendix 4-1.

Fuel-Efficient Vehicle Policy Requirements

A fuel-efficient vehicle policy cannot contain contingency language regarding future budgetary constraints. DOER will work with municipalities on a case-by-case basis should they encounter difficulty complying with their fuel-efficient vehicle policy due to a budget issue in a particular year.

The fuel-efficient vehicle policy only applies to certain vehicles. The following vehicles are exempt from the policy:

- Heavy-duty vehicles are exempt. Examples include fire-trucks, ambulances, and some public works trucks that meet the definition of a heavy-duty vehicle (a heavy-duty vehicle is defined as a vehicle with a manufacturer's gross vehicle weight rating (GVWR) of more than 8,500 pounds.)

- Police cruisers, passenger vans, and cargo vans are exempt since fuel-efficient models are not currently available. However Upton must commit to purchase fuel-efficient police cruisers, passenger vans, and cargo vans when they become commercially available. Police and fire department administrative vehicles are not exempt and must meet fuel efficiency requirements.

When replacing exempt vehicles, municipalities need to review the function of the vehicle for potential replacement with a more fuel-efficient vehicle, including a fuel-efficient non-exempt vehicle. There is, however, no requirement that an exempt vehicle be replaced with a non-exempt vehicle.

Municipalities must also maintain a vehicle inventory for all vehicles, both exempt and non-exempt. A plan for replacing non-exempt vehicles with vehicles that meet the fuel efficiency ratings below must also be developed and maintained. The fuel efficiency ratings are set to ensure that at least five or more automatic transmission models of mass production are available for sale in Massachusetts (all from affordable brands, no luxury brands.) Based on 2010 EPA data, vehicles are to have a combined city and highway MPG no less than the following (hybrid and electric vehicles in these vehicle classes meet these criteria):

Vehicle	Drive	MPG
Car	2WD	29
Car	4WD	24
SUV	2WD	21
SUV	4WD	18
Pick-up truck	2WD	17
Pick-up truck	4WD	16
Minivan	2WD	20
Minivan	4WD	18

The EPA combined fuel economy) is a combination of 43 percent city miles and 57 percent highway miles and is calculated as follows: =1/[(0.43/City MPG) + (0.57/highway MPG)]. Departments may use EPA combined MPG estimates or actual combined MPG.

All non-exempt vehicles shall be replaced with fuel-efficient vehicles that adhere to the most recent Green Communities Criterion Four Guidance. The Green Communities Division will adjust the MPG requirements periodically as more fuel-efficient vehicle models are released. As such, municipalities must check DOER's Criterion 4 guidance prior to ordering new vehicles.

Vehicles shall be replaced when there are no longer operable. Vehicle recycling – moving a previously purchased vehicle from one municipal department to another municipal department in need of a vehicle – is only permitted if the recycled vehicle meets the fuel-efficient criteria listed above.

The DOER's guidance specifically states that a Ford Crown Victoria does not meet the fuel-efficient vehicle requirements so could not be recycled. As such, had a Fuel-Efficient Vehicle Policy been in place, it appears Upton would not have been able to transfer the Crown Victoria currently being used by the Town Manager from the Police Department to the Town Manager.

Municipalities must annually review its vehicle inventory, along with the current combined MPG fuel-efficient vehicle requirements issued by the Green Communities Division, to plan for new acquisitions as part of planning for the new fiscal year budget. The annual inventory reported to the Green Communities Division must include, in addition to fields already found on the town's vehicle inventory, the following fields: drive system (AWD, 4WD, 2WD), date purchased, gross vehicle weight (the existing inventory includes a field for this but it is not shown for all vehicles), exempt/non-exempt, and vehicle function.

While not shown as a requirement of a fuel-efficient vehicle policy, the DOER's guidance suggests that municipalities should, in order to encourage efficient driving practices, implement a monitoring system to record miles driven and fuel consumption for each vehicle in every department. Such a monitoring system would help facilitate a municipality's reducing fuel consumption.

Documentation Required to Meet Criterion 4

- Copy of the policy or other mechanism adopted for purchasing only fuel-efficient vehicles
- Inventory of all vehicles (model, year, estimated MPG) with exempt/non-exempt status indicated
- Replacement plan for non-exempt vehicles with fuel-efficient vehicles
- Documentation that the municipality has adopted the fuel-efficient vehicle policy.

Discussion

The Town Manager and department heads reviewed the fuel-efficient vehicle policy requirements and Upton's existing vehicle inventory and were concerned that two of the town's 2006 Silverado's could not be replaced with something similar (they are both used for snow plowing.) Since both of these appear to have gross vehicle weight ratings of more than 8,500 pounds they are currently exempt from the fuel-efficient vehicle replacement requirements and could be replaced with something similar. The fuel-efficient vehicle policy only requires that the town acquire fuel-efficient vehicles when it plans to acquire a vehicle less than 8,500 pounds GVWR (a "light-duty" vehicle.)

The fuel-efficient vehicle policy requirements prohibit transferring a vehicle that does not meet the fuel-efficient MPG rating requirements from one department to another ("vehicle recycling.") According to the Town Manager, the town "does not do it a lot but in some cases, like the animal control vehicle, it makes much more sense economically to do that than spend a lot of money for a new vehicle that gets relatively low use. This is something we'll have to factor into a decision on pursuing designation."

The vehicle that was transferred to Animal Control recently, the DPW's 2001 Blazer, is a good example of a vehicle that could not be transferred under the Green Communities fuel-efficient vehicle policy. The 2001

Blazer has EPA MPG ratings of 17 (2WD automatic) and 15 (4WD drive automatic.) These ratings do not meet the fuel-efficient SUV requirements of the policy of 21 and 18, respectively (see the chart above.)

Since the town only recycles vehicles occasionally it is likely that the cost of complying with the no-recycling of "inefficient" vehicles would be significantly less than the benefits, the grants and energy savings, of Green Communities designation. As such, the Committee recommends that the town investigate ways to more cost-effectively comply with the no-recycling policy. For example, it may be possible to acquire a used fuel-efficient vehicle for low-mileage situations. Since the policy does not prohibit transferring fuel-efficient vehicles, it may be possible to arrange for a transfer of a vehicle in the town's vehicle inventory that is fuel-efficient. The Committee also recommends that we provide the Green Communities program with an analysis of the cost-effectiveness of recycling vehicles to low-mileage uses. The spirit of the program is cost-effective energy efficiency, so we expect a fair hearing of the proposal. Finally, if a community does have difficulty complying with its Fuel-Efficient Vehicle Policy due to a budge issue, DOER will work with municipalities on a case-by-case basis to help resolve the issue.

The following page shows current replacement options for Upton's non-exempt vehicles.

Action Items

- Complete analysis of cost of complying with no vehicle recycling as required to be designated a Green Community
- Make recommendation to Board of Selectmen on adopting Fuel Efficient Vehicle Policy
- Draft a Fuel-Efficient Vehicle Policy using the model policy provided by DOER
- Have Town Counsel review policy, if required
- Adopt the policy
- Prepare a vehicle inventory with the information required by DOER. Obtain the following information for the vehicles listed in Upton's vehicle inventory:
    - Get gross vehicle weight ratings (GVWR) for vehicles missing this information and confirm listed GVWRs
    - Drive system, date purchased, and vehicle function

Current Model	Recommended Vehicle	Drive	Model	MPG	Seats	Towing capacity (pounds)	Cost
1999 BOH Explorer--replaced by 2001 Chevrolet Blazer	2014 Chevrolet Equinox	All-Wheel	Crossover	27 mpg	5	3500 pounds	$24, 360
	2014 Dodge Durango SXT	All-Wheel	SUV	21 mpg	5	6200 pounds	$31, 495
	2014 GMC Terrain	All-Wheel	SUV	27 mpg	5	11, 500 pounds	$26, 465
	2014 Ford Escape	All-Wheel	SUV	26 mpg	5	3500 pounds	$22, 700
2005 Ford Crown Victoria	2014 Subaru XV Crosstrek Hyrbrid	All-Wheel	Hybrid Crossover	29 mpg	5	NA	$21, 995
	2014 Subaru Impreza	All-Wheel	Sedan	31 mpg	4	NA	$17, 895
	2014 Ford Escape	All-Wheel	SUV	26 mpg	5	3500 pounds	$22, 700
	2014 Ford Fusion	All-Wheel	Sedan	26 mpg	5	2000 pounds	$32, 500
2007 Dodge Charger	2014 Ford Fusion	All-Wheel	Sedan	26 mpg	5	2000 pounds	$32, 500
	2014 Dodge Charger SXT	All-Wheel	Sedan	25 mpg	4	1000 pounds	$29, 295
	2014 Dodge Dart	All-Wheel	Sedan	34 mpg	4	Depends on engine selected	$15, 995
	2014 Dodge Avenger SE	All-Wheel	Sedan	25 mpg	4	1000 pounds	$20, 595
2005 Chevrolet Silverado	2014 Chevrolet Silverado	All-Wheel	Pick-up truck	19 mpg	5	12, 000 pounds	$25, 575
	2014 Ford Explorer	All-Wheel	SUV	20 mpg	7	2000 pounds	$32, 200
	2014 Toyota Tacoma	2WD	Pick-up truck	23 mpg	5	6500 pounds	$17, 875
	2014 GMC Terrain	All-Wheel	SUV	27 mpg	5	11, 500 pounds	$26, 465
2013 Chevrolet Silverado	2014 Chevrolet Silverado	All-Wheel	Pick-up truck	19 mpg	5	12, 000 pounds	$25, 575
	2014 RAM Tradesman	All-Wheel	Pick-up truck	21 mpg	5	11, 500 pounds	$26, 075

10.0 DETAILED DESCRIPTION AND DISCUSSION OF CRITERION 5: STRETCH ENERGY CODE

DOER recommends that municipalities adopt the Board of Building Regulations and Standards (BBRS) "Stretch Energy Code" (780 CMR 115.AA), an appendix to the state building code, to meet this criterion. A municipality could choose not to adopt the Stretch Energy Code and use a different energy code, but it would have to provide evidence that the alternative energy code minimized life-cycle energy costs as required by the Green Communities Act and was enforceable (a community would have to seek an exemption from the BBRS energy code jurisdiction.) The criterion in the Green Communities Act states that municipalities must "Require all new residential construction over 3,000 square feet and all new commercial and industrial real estate construction to minimize, to the extent feasible, the life-cycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies."

In order for Upton to adopt the Stretch Energy Code, Town Meeting must vote to adopt it as a general bylaw. Upton can also rescind the Stretch Energy Code through a Town Meeting vote. Once a municipality adopts the Stretch Energy Code all future editions, amendments and modifications of the Stretch Energy Code are automatically adopted unless the municipality rescinds its adoption of the Stretch Energy Code. A municipality must use the Stretch Energy Code "as-is," without applying any amendments or conditions. A model Stretch Energy Code bylaw is attached as Exhibit 5-1.

If adopted, the Stretch Energy Code applies to all new commercial and residential construction (including homes less than 3,000 square feet,) additions to commercial buildings, and to residential additions, alterations, renovations and repairs. Once adopted it can only go into effect on July 1 or January 1 and there must be at least six months between adoption and when it becomes mandatory. If Upton Town Meeting voted to adopt the Stretch Energy Code at the 2014 Annual Town Meeting, the Stretch Energy Code would be mandatory on January 1, 2015. During the interim period the Stretch Energy Code would be optional.

As of the end of 2013, 133 communities, representing about 50% of the population, had adopted the Stretch Energy Code.

Documentation Required to Meet Criterion 5

The municipality must provide documentation of the town meeting vote adopting 780 CMR 115.AA, the MA Board of Building Regulations and Standards (BBRS) Stretch Energy Code. The vote must include the effective date of the Stretch Energy Code.

Energy Codes

In Massachusetts, cities and towns are required to follow the state building and energy codes adopted by the BBRS. Local codes are not permitted. The BBRS recently adopted a new base energy code, which is the 2012 International Energy Conservation Code[1] (IECC) (the previous base energy code was an amended version of the 2009 IECC.) It was adopted in July 2013 with an extended concurrency period and it becomes mandatory in communities that did not adopt the Stretch Energy Code on July 1, 2014. Until then, builders can choose either the expiring base energy code (2009 IECC) or the new base energy code (2012 IECC.) Those

[1] The International Energy Conservation Code (IECC) is a model building code produced by the International Code Council (ICC). It is developed through a public hearing process under which all interested parties can propose and/or comment on code requirements. Code requirements are adopted by the vote of eligible voters, who are members of all levels of government engaged in building codes. The IECC is updated every three years and is used by many jurisdictions, either as-is or as amended, as their energy code. Under the Green Communities Act, the state is required to integrate the latest IECC into the state building code within one year of its being promulgated. The state is now in the process of integrating the 2012 IECC into the base building code.

communities that adopted the Stretch Energy Code will be required to adopt a new Stretch Energy Code if one is adopted. Until then, they will continue to follow the existing Stretch Energy Code.

The existing Stretch Energy Code was adopted by the BBRS in May 2009 as an option for municipalities interested in enacting an energy code that was more energy efficient than the state's base energy code. It is an amended version of the 2009 IECC. New commercial and residential buildings built to the Stretch Energy Code are approximately 20% more efficient than those built to the expiring base energy code (2009 IECC.)

Another feature of the Stretch Energy Code is that new residential buildings 3-stories or less are required to meet an energy performance standard using the Home Energy Rating System index (HERS) [1] rating. Specifically, new residential buildings less than 3,000 square feet must have a HERS rating of 70 or better and a residential building of greater than or equal to 3,000 square feet must have a HERS rating of 65 or better (lower ratings are better.) This performance-based measure (vs. the typical prescriptive approach of requiring specific energy efficiency measures such as insulation with a minimum R-value) gives builders the flexibility to use whatever energy efficiency measures will achieve the required HERS rating.

The Stretch Energy Code also applies to additions, alterations, renovations and repairs (as does the base energy code,) and establishes optional HERS rating targets that can be met to comply with it. It also includes prescriptive options for complying with the Stretch Energy Code. For example, additions must conform to the most recent Energy Star for Homes Prescriptive Builders Option Package (except for heating and cooling equipment and appliances,) the Energy Star Qualified Homes Thermal Bypass Inspection Checklist, and envelope insulation that meet or exceed the 2009 IECC requirements. The requirements for alterations, renovations and repairs apply only to things that are changed.

A HERS rating, for purposes of complying with the Stretch Energy Code, runs $900 to $1,200. A builder can offset in part the cost of the HERS rater if the building otherwise complies the requirements of utility-sponsored energy efficiency programs. One of the benefits of the HERS rating process is that it confirms that the energy efficiency measures are installed properly, ensuring greater compliance with the energy code. It is also a tool that allows homebuyers to estimate their likely energy costs.

The existing Stretch Energy Code and the newly adopted base energy code (2012 IECC) effectively result in new houses that are about as efficient as one another. Construction costs should be similar as well. Changes, if any, to the existing Stretch Energy Code have not been determined so the adoption process has not started.

For the purposes of this report, the committee focused on the Stretch Energy Code's residential construction requirements as Upton has little commercial activity and the commercial requirements in the Stretch Energy Code have been generally accepted by the construction industry.

[1] A HERS index rating is a measure of a home's energy efficiency. It is based on a comparison of the energy use of a subject home to the energy use of a reference home (a home built to the 2006 IECC, which is assigned a HERS rating of 100) and uses computer modeling to calculate energy use. The HERS modeling takes into account the building envelope (insulation, doors, windows, air tightness), the efficiency of the mechanical systems (HVAC, hot water), the efficiency of lighting and appliances, and use of renewable energy. It requires that blower door and duct leakage tests be performed to evaluate air tightness. Each 1 percent difference in the energy use of the modeled home as compared to the reference home is 1 point on the HERS index. As such, a home with a HERS rating of 65 is 35 percent more efficient than the reference home. HERS ratings are calculated by certified HERS raters and for quality assurance purposes 1 to 2 percent of each HERS raters ratings are double-checked. The HERS rating has been in use for many years in programs such as Energy Star and LEED and by the federal government to qualify homes for tax credits and energy efficient mortgages. A HERS rating helps ensure, by virtue of air tightness testing and inspection routines, that a home will perform as designed, and it provides a measure that can be used to compare the energy efficiency of different.

Discussion

The United States, with 4.6 percent of the world population, accounts for 21.7 percent of the primary energy consumption of the world. Housing alone accounts for 21 percent of the primary energy consumption in the United States and 37 percent of the electrical demands of the nation. Houses are long-lived, so the construction decisions made today will impact energy usage for years to come. Controlling the energy usage of houses is important, and doing so in a way that is cost-effective is also important. The Stretch Energy Code may be an effective way to do that.

The Committee believes the BBRS, with input from the DOER, is likely to change the existing Stretch Energy Code so that it continues to represent a "stretch" from the base energy code. As noted above, the existing Stretch Energy Code and the newly adopted base energy code (2012 IECC) effectively result in new houses that are about as efficient as one another. The existing Stretch Energy Code will need to be changed to continue to "stretch" beyond the newly adopted base energy code (2012 IECC.) DOER started gathering input on a new Stretch Energy Code in October. As of December 14th, it had collected 14 written comments.

The Committee does not know how the existing Stretch Energy Code will change, though it believes cost effectiveness is one of the criteria that will be used to evaluate any proposed changes to the Stretch Energy Code, so it is likely that any changes will have a demonstrable cost effectiveness. Analyses prepared by DOER and the U.S. Department of Energy comparing homes built to old base energy code and the existing Stretch Energy Code showed that the additional cost of complying with the Stretch Energy Code resulted in a positive cash flow for the homebuyer – that is the cost savings of the energy efficiency measures were greater than the increase in the mortgage payment related to the financing of the energy efficiency measures. Payback, the cost of the energy efficiency measures divided by the annual energy savings was 3 – 7 years.

If a new Stretch Energy Code is not adopted, the cost of homes constructed to either code will be similar. Complying with the Stretch Energy Code will continue to require a HERS rating or either 65 or 70, while the new base energy code includes an option to comply by achieving a HERS rating of 65. The new base energy code also requires blower door and duct leakage tests – two requirements for a HERS rating.

The Committee believes there are reasonable offsetting arguments to objections raised by opponents of the Stretch Energy Code. The Home Builders Association of Massachusetts raised the following concerns about the Stretch Energy Code: any increase in first cost associated with building to the Stretch Energy Code would prevent some homebuyers from qualifying for a mortgage for those houses; two energy codes, coupled with the three-year update cycle of the energy codes, is an unfair burden on builders and also adds a training burden on Code Enforcement staff; any energy efficiency measures that are more stringent than those in the base energy code should be optional – not mandated under a more stringent code; and indoor air quality, and the health of the occupants, may suffer as a result of the increased air-tightness required under the Stretch Energy Code.

In response to the concern about affordability, the Committee notes that energy savings may enhance affordability and that there are mortgage programs that take into account energy savings. In the case of consumer choice, another view of the situation is that it is appropriate for a community to choose to reduce the environmental impact of buildings in the community, especially in light of the fact that they are long-lived assets that will impact the community for years to come. In response to the concern about the burden on builders and Code Enforcement staff, the Committee notes that 133 communities have adopted the Stretch Energy Code, it is likely that many builders now have significant experience with both energy codes and that there is effective Stretch Energy Code training and support for builders and code enforcement staff. DOER also offers resources for training code enforcement staff. The Committee did not find any data that indicate that the adoption of the Stretch Energy Code has had a negative impact in any of the communities where it has been adopted.

Communities near Upton that have adopted the Stretch Energy Code include Hopkinton, Mendon, Ashland, Medway, Worcester, Auburn, Millbury, Sutton, and Blackstone.

The concern about air quality is addressed by the new base energy code (2012 IECC.) It requires mechanical ventilation to ensure indoor air quality. Energy-efficient houses are more comfortable as the heat is retained and there are no drafts and unevenly heated rooms. Moisture and water issues are addressed, which makes the building more durable and healthier to live in. With reduced air infiltration, there are fewer allergens entering the house. The American Lung Association's Health House closely parallels an Energy Star Home.

The Committee also notes the following about adopting the Stretch Energy Code:

- Using HERS ratings, instead of a prescriptive list of energy efficiency measures, as the method for complying with the Stretch Energy Code gives builders more flexibility in building design and likely results in a more cost-effective method of achieving a desired degree of energy efficiency. A HERS rating is also a useful tool for comparing the energy use of houses. It is becoming more widely used in MLS listings and is valuable information for a prospective buyer.
- It is far less expensive to incorporate energy efficiency measure when building a house than it is to retrofit an existing building, which can never be done completely.
- Energy efficiency is clearly important to many people. 133 communities, representing about half of the state's total population, have adopted the Stretch Energy Code.
- Halina Brown, Professor of Environmental Science and Policy at Clark University and a resident of Newton analyzed the 150 to 200 homes constructed in Newton under the Stretch Code for the Newton Energy Commission and found the HERS ratings of these homes were somewhere between 50 and 60 and some as low as in the 40's. She writes that there were no complaints of hardship from the builders.
- No community has rescinded its adoption of the Stretch Energy Code.

The Committee concluded that adopting the existing Stretch Energy Code was likely beneficial for those communities that adopted it because we believe that it was likely cost-effective for homebuyers to finance the additional costs associated with the Stretch Energy Code energy efficiency measures (the energy savings over a base energy code home were greater than the increase in mortgage payment for financing the energy efficiency measures as shown by the analyses below). That benefit will accrue to all future owners over the life of the house, and will contribute to the global effort to reduce greenhouse gas emissions, which should help reduce or avoid the impacts of climate change. Adopting the Stretch Energy Code also qualified those communities for Green Communities designation and the grants for energy efficiency measures that are available under the program. The Committee also believes there are reasonable offsetting arguments to the concerns with the Stretch Energy Code raised by HBAM.

The Committee expects the next version of the Stretch Energy Code will have similar benefits and recommends that adoption of the Stretch Energy Code be put before Town Meeting as part of the effort to qualify for Green Communities designation. If it is possible to hold off on putting it before Town Meeting until the changes to the Stretch Energy Code are known, and still meet the October 30, 2014 deadline for applying for Green Communities designation, the Committee recommends waiting until the changes are known. The Committee recommends that the town strive to apply for designation in 2014.

Action Items

The following steps need to be taken to pursue designation:

- Draft a Stretch Energy Code general bylaw using model bylaw provided by DOER
- Get legal review, if needed
- Conduct one or more informational sessions on the Stretch Energy Code

- Add Stretch Energy Code bylaw article to the Town Meeting warrant
- Town Meeting votes on adopting the Stretch Energy Code
- Attorney General approves Stretch Energy Code Energy bylaw

The following steps are taken if Upton adopts the Stretch Energy Code

- Note: If the Stretch Energy Code bylaw is adopted at a Town Meeting in the first half of 2014, it becomes mandatory on January 1, 2015, if it is adopted at a Town Meeting in the second half of 2014, it becomes mandatory on July 1, 2016
- Train Code Enforcement on Stretch Energy Code
- Update policy manuals, any other documents that refer to energy codes, and electronic permitting system as needed
- Report on building permits issued, compliance with Stretch Energy Code, and HERS rating of completed buildings

Cost-Effectiveness Analyses of the Existing Stretch Energy Code

The following analyses of the cost-effectiveness of the additional energy efficiency measures required under the existing Stretch Energy Code for new houses are included for informational purposes as they show the kind of information that will likely be available for any new Stretch Energy Code. This is the kind of information the Committee would have used if it had been evaluating adoption of the existing Stretch Energy Code when the expiring base energy code was still in effect.

Each analysis shows the cost of the energy efficiency measures required over those in the energy code shown in the first line. Annual energy savings and additional cost to consumer were taken from the various analyses. The payback is the additional cost divided by the annual energy savings. The annual cash flow is the annual energy savings minus the mortgage payment associated with the additional cost (30 year mortgage – the assumed mortgage rates varied slightly but were in the 5-6% range.)

The National Association of Home Builders reports that homebuyers want a payback of 7 or fewer years for energy efficiency measures.

Home Builders Association of Massachusetts
Ekotrope, Inc. Report
Based on 1,792 sq. ft. house

Code	Cost of Energy Efficiency Measures	Annual Energy Savings over 6th	Payback	Annual Cash Flow
6th Edition Base	0	0	0	0
8th Edition Base	4,992	181	27.6	(141)
Original Stretch	6,485	334	19.4	(84)
IECC 2012	16,049	603	26.6	(431)
New Stretch	17,426	696	25.0	(426)

The HBAM commissioned Ekotrope to do this analysis. Based on this analysis it appears that it makes sense to adopt the Stretch Energy Codes as it offsets the cost of adhering to the base energy codes. The new stretch was presumably HBAM's assessment of how the existing Stretch Energy Code would change.

Department of Energy Resources
Internal Study
Based on 1,708 sq. ft. house

Code	Cost of Energy Efficiency Measures	Annual Energy Savings over 8th	Payback	Annual Cash Flow
8th Edition Base	0	0	0	0
Stretch	4,162	583	7.1	281
Stretch with Energy Star Incentives	3,243	595	5.5	359

Department of Energy Resources
Internal Study
Based on 2,672 sq. ft. house

Code	Cost of Energy Efficiency Measures	Annual Energy Savings over 8th	Payback	Annual Cash Flow
8th Edition Base	0	0	0	0
Stretch	2,949	507	5.8	293
Stretch with Energy Star Incentives	1,755	516	3.4	389

Department of Energy Resources
Internal Study
Based on 4,462 sq. ft. house

Code	Cost of Energy Efficiency Measures	Annual Energy Savings over 8th	Payback	Annual Cash Flow
8th Edition Base	0	0	0	0
Stretch	6,476	1,455	4.5	984
Stretch with Energy Star Incentives	5,176	1,455	3.6	359

U. S. Department of Energy
Internal Study
Based on 2,400 sq. ft. house

Code	Cost of Energy Efficiency Measures	Annual Energy Savings over 8th	Payback	Annual Cash Flow
IECC 2009	0	0	0	0
IECC 2012	$1,787	621	2.9	524

11.1 APPENDIX 1: MODEL AS-OF-RIGHT ZONING BYLAW FOR LARGE-SCALE GROUND-MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS

Model As-of-Right Zoning Bylaw: Allowing Use of Large-Scale Ground-Mounted Solar Photovoltaic Installations

Prepared by:
Department of Energy Resources
Massachusetts Executive Office of Environmental Affairs

March 2012

This Model Bylaw was prepared to assist cities and towns in establishing reasonable standards to facilitate development of large-scale ground-mounted solar photovoltaic installations. The bylaw was developed as a model and is not intended for adoption without specific review by municipal counsel.

1.1 Purpose

The purpose of this bylaw is to promote the creation of new large-scale ground-mounted solar photovoltaic installations by providing standards for the placement, design, construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on scenic, natural and historic resources and to provide adequate financial assurance for the eventual decommissioning of such installations.

The provisions set forth in this section shall apply to the construction, operation, and/or repair of large-scale ground-mounted solar photovoltaic installations.

1.2 Applicability

This section applies to large-scale ground-mounted solar photovoltaic installations proposed to be constructed after the effective date of this section. This section also pertains to physical modifications that materially alter the type, configuration, or size of these installations or related equipment.

Qualifying as a Green Community: *In order to satisfy the Green Communities Act as-of-right zoning requirement a community's zoning must allow solar photovoltaic installations that utilize ground-mounted systems which individually have a rated name plate capacity of 250 kW (DC) or more.*

Approximate size of installation: *A solar photovoltaic array with a rated name plate capacity of 250 kW (DC) occupies approximately one acre of land.*

Smaller installations (under 250 kW): *The above requirement for qualification as a Green Community is not intended to discourage construction of solar photovoltaic installations that are smaller than 250 kW, but rather to ensure that in designated locations local regulatory barriers that may adversely affect large-scale ground-mounted projects are minimized.*

Educational Note: *Existing Massachusetts law largely exempts solar photovoltaic installations from local zoning restrictions. Massachusetts General Laws Chapter 40A, Section 3, provides, in relevant part, that:*

> *No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare.*

In view of M.G.L. ch. 40A § 3, local zoning provisions specifically allowing for the as-of-right construction of smaller solar energy systems – such as those commonly installed on top of or on the lot of a home or business—are unnecessary. However, it is not clear whether M.G.L. ch. 40A § 3 applies to the construction of large scale ground-mounted systems. Therefore, to qualify as a green community, a municipality may adopt a solar photovoltaic bylaw for as-of-right siting of large scale ground-mounted systems in a designated location(s). An existing example of a large scale ground-mounted solar photovoltaic system is the Brockton Brightfields Project.

2.0 Definitions

As-of-Right Siting: As-of-Right Siting shall mean that development may proceed without the need for a special permit, variance, amendment, waiver, or other discretionary approval. As-of-right development may be subject to site plan review to determine conformance with local zoning ordinances or bylaws. Projects cannot be prohibited, but can be reasonably regulated by the inspector of buildings, building commissioner or local inspector, or if there is none in a town, the board of selectmen, or person or board designated by local ordinance or bylaw.

Building Inspector: The inspector of buildings, building commissioner, or local inspector, or person or board designated by local ordinance or bylaw charged with the enforcement of the zoning ordinance.

Building Permit: A construction permit issued by an authorized building inspector; the building permit evidences that the project is consistent with the state and federal building codes as well as local zoning bylaws, including those governing ground- mounted large-scale solar photovoltaic installations.

Designated Location: The location[s] designated by [the community's local legislative body], in accordance with Massachusetts General Laws Chapter 40A, section 5, where ground - mounted large scale solar photovoltaic installations may be sited as-of right. Said location[s] [is/are] shown on a Zoning Map [insert title of map] pursuant to Massachusetts General Laws Chapter 40A Section 4. This map is hereby made a part of this Zoning Bylaw and is on file in the Office of the [Town/City] Clerk.

Note: *The term ―designated location‖ refers to the location within a community where solar photovoltaic installations are permitted as-of-right. Establishment of a designated location for such installations is an integral part of the process of adopting an as-of-right solar photovoltaic bylaw.*

Legal Requirements: *The process of designating the location must comport with the requirements of Massachusetts General Laws Chapter 40A, Section 5, which sets out the requirements for adopting and amending zoning bylaws.*

Methods of Designating a Location: *Communities may designate locations by reference to geographically specific districts. In the alternative, communities may create an overlay district consisting of all or portions of multiple preexisting zoning districts, where large scale solar photovoltaic power generation is permitted by right. Because solar photovoltaic power generation produces neither adverse noise impacts nor harmful emissions, use of land for the purpose of solar photovoltaic power generation should be compatible with most other types of land usage. However DOER strongly discourages designating locations that require significant tree cutting, because of the important water management, cooling and climate benefits trees have. DOER encourages designating locations in industrial and commercial districts, or on vacant, disturbed land.*

Green Communities Program Requirements: *To qualify for designation as a Green Community, the designated location must provide a realistic and practical opportunity for development of a large scale solar photovoltaic power generation facility. In designating a location, it is important for the community implementing the as-of right zoning bylaw to consider the availability of sunlight and particular characteristics of the local community. It is not practical to site solar photovoltaic installations in areas that are surrounded by tall structures. The size of available lots is also a relevant consideration, though aggregation of contiguous parcels within a designated district in order to create a parcel of sufficient size to construct a qualifying facility will be considered. As previously mentioned, a solar photovoltaic array with a rated name plate capacity of 250 kW occupies approximately one acre of land.*

Large-Scale Ground-Mounted Solar Photovoltaic Installation: A solar photovoltaic system that is structurally mounted on the ground and is not roof-mounted, and has a minimum nameplate capacity of 250 kW DC.

On-Site Solar Photovoltaic Installation: A solar photovoltaic installation that is constructed at a location where other uses of the underlying property occur.

Rated Nameplate Capacity: The maximum rated output of electric power production of the Photovoltaic system in Direct Current (DC).

Site Plan Review: review by the Site Plan Review Authority to determine conformance with local zoning ordinances or bylaws.

Note: *In some communities this is known as Site Plan Approval rather than Site Plan Review. Regardless of which term is used by a community, the following excerpt from Lowe's Home Centers, Inc. v. Town of Auburn Planning Board provides an excellent judicial explanation of the nature of site plan review as applied to as-of-right uses:*

Site plan approval acts as a method for regulating as-of-right uses rather than prohibiting them as per Y.D. Dugout, Inc. v. Bd. Of Appeals of Canton, 357 Mass. 25, 31, 255 N.E.2d 732 (1970). When evaluating the Site Plan Applications, the Planning Board may not unconditionally deny the Site Plan Applications, but rather, it may impose reasonable conditions upon them. See Prudential, 23 Mass.App.Ct. at 281-82, 502 N.E.2d 137; Quincy, 39 Mass.App.Ct. at 21-22, 652 N.E.2d 901 (—[W]here the proposed use is one permitted by right the planning board may only apply substantive criteria ... i.e., it may impose reasonable terms and conditions on the proposed use, but it does not have the discretionary power to deny the use.‖). Thus, when a site plan application is submitted for an as-of-right use, a planning board is obligated to grant an approval with reasonable conditions unless, —despite best efforts, no form of reasonable conditions [can] be devised to satisfy the problem with the plan....‖ Prudential, 23 Mass.App.Ct. at 283n. 9, 502 N.E.2d 137; Castle Hill Apartments Ltd.P'ship v. Planning Bd. Of Holyoke, 65 Mass.App.Ct. 840, 845-45, 844 N.E.2d 1098 (2006).

Site Plan Review Authority: For purposes of this bylaw, Site Plan Review Authority refers to the body of local government designated as such by the municipality

Note: *The Site Plan Review Authority can be the Board of Selectman, City Council, Board of Appeals, Planning Board or Zoning Administrator. However, the Planning Board is typically the best group to serve in this capacity as it is usually the most familiar with the municipality's zoning bylaws/ordinances as well as its Master Plan or other plans for future conservation/development.*

Zoning Enforcement Authority: The person or board charged with enforcing the zoning ordinances or bylaws.

Note: *By state statute, the Zoning Enforcement Authority may be the —inspector of buildings, building commissioner or local inspector, or if there are none, in a town, the board of selectmen, or person or board designated by local ordinance or by-law‖. M.G.L. ch. 40A § 7. In many communities, the building inspector is the person charged with enforcing both the state's building code and local zoning ordinances or bylaws.*

3.1 General Requirements for all Large Scale Solar Power Generation Installations

The following requirements are common to all solar photovoltaic installations to be sited in designated locations.

3.2 Compliance with Laws, Ordinances and Regulations

The construction and operation of all large scale solar photovoltaic installations shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, electrical, and communications requirements. All buildings and fixtures forming part of a solar photovoltaic installation shall be constructed in accordance with the State Building Code.

3.3 Building Permit and Building Inspection

No large scale solar photovoltaic installation shall be constructed, installed or modified as provided in this section without first obtaining a building permit.

Note: *Under the state building code, work must commence within six (6) months from the date a building permit is issued; however, a project proponent may request an extension of the permit and more than one extension may be granted.*

3.4 Fees

The application for a building permit for a large scale solar photovoltaic installation must be accompanied by the fee required for a building permit.

3.5 Site Plan Review

Ground-mounted large scale solar photovoltaic installations with 250 kW or larger of rated nameplate capacity shall undergo site plan review by the Site Plan Review Authority prior to construction, installation or modification as provided in this section.

Purpose: *The purpose of the site plan review is to determine that the use complies with all requirements set forth in this zoning bylaw and that the site design conforms to established standards regarding landscaping, access, and other zoning provisions.*

Additional Considerations: *As part of the implementation of an as-of-right large-scale ground-mounted solar photovoltaic bylaw, communities should consider amending their existing site plan review provisions in order to incorporate site plan review conditions that apply specifically to such installations.*

3.5.1 General

All plans and maps shall be prepared, stamped and signed by a Professional Engineer licensed to practice in Massachusetts.

3.5.2 Required Documents

Pursuant to the site plan review process, the project proponent shall provide the following documents:

(a) A site plan showing:

- **i.** Property lines and physical features, including roads, for the project site;
- **ii.** Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures;

iii. Blueprints or drawings of the solar photovoltaic installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts showing the proposed layout of the system and any potential shading from nearby structures

iv. One or three line electrical diagram detailing the solar photovoltaic installation, associated components, and electrical interconnection methods, with all National Electrical Code compliant disconnects and overcurrent devices;

v. Documentation of the major system components to be used, including the PV panels, mounting system, and inverter;

vi. Name, address, and contact information for proposed system installer;

vii. Name, address, phone number and signature of the project proponent, as well as all co-proponents or property owners, if any;

viii. The name, contact information and signature of any agents representing the project proponent; and

(b) Documentation of actual or prospective access and control of the project site (see also Section 3.5);

(c) An operation and maintenance plan (see also Section 3.6);

(d) Zoning district designation for the parcel(s) of land comprising the project site (submission of a copy of a zoning map with the parcel(s) identified is suitable for this purpose);

(e) Proof of liability insurance; and

(f) Description of financial surety that satisfies Section 3.12.3.

(g) A public outreach plan, including a project development timeline, which indicates how the project proponent will meet the required site plan review notification procedures and otherwise inform abutters and the community

The Site Plan Review Authority may waive documentary requirements as it deems appropriate.

Additional Consideration for Smaller Solar Photovoltaic Installations: *The extensive site plan review documentation set forth in Section 3.4.2 of this model bylaw is not intended to apply to smaller solar photovoltaic installations. One of the key goals underpinning the Green Communities Program is the development of renewable and alternative energy generation. Communities should shape their bylaws to enable both large and small projects to proceed without undue delay.*

3.6 Site Control

The project proponent shall submit documentation of actual or prospective access and control of the project site sufficient to allow for construction and operation of the proposed solar photovoltaic installation.

3.7 Operation & Maintenance Plan

The project proponent shall submit a plan for the operation and maintenance of the large-scale ground-mounted solar photovoltaic installation, which shall include measures for

maintaining safe access to the installation, storm water controls, as well as general procedures for operational maintenance of the installation.

3.8 Utility Notification

No large- scale ground –mounted solar photovoltaic installation shall be constructed until evidence has been given to the Site Plan Review Authority that the utility company that operates the electrical grid where the installation is to be located has been informed of the solar photovoltaic installation owner or operator's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

3.9 Dimension and Density Requirements

3.9.1 Setbacks

For large - scale ground-mounted solar photovoltaic installations, front, side and rear setbacks shall be as follows:

(a) Front yard: The front yard depth shall be at least 10 feet; provided, however, that where the lot abuts a Conservation-Recreation or Residential district, the front yard shall not be less than 50 feet.

(b) Side yard. Each side yard shall have a depth at least 15 feet; provided, however, that where the lot abuts a Conservation-Recreation or Residential district, the side yard shall not be less than 50 feet.

(c) Rear yard. The rear yard depth shall be at least 25 feet; provided, however, that where the lot abuts a Conservation-Recreation or Residential district, the rear yard shall not be less than 50 feet.

Note: *These setback distances are suggested values. Decreased setback distances may be appropriate. The municipality should evaluate what is appropriate for its designated location(s). Project developers may be encouraged to include screening vegetation along the borders of the site, to minimize the visual impact of the PV installation.*

3.9.2 Appurtenant Structures

All appurtenant structures to large- scale ground-mounted solar photovoltaic installations shall be subject to reasonable regulations concerning the bulk and height of structures, lot area, setbacks, open space, parking and building coverage requirements. All such appurtenant structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other. Whenever reasonable, structures should be shaded from view by vegetation and/or joined or clustered to avoid adverse visual impacts.

Note: *Regulations governing appurtenant structures are typically contained in a town's zoning ordinance or bylaw.*

3.10 Design Standards

3.10.1 Lighting

Lighting of solar photovoltaic installations shall be consistent with local, state and federal law. Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties. Where feasible, lighting of the solar photovoltaic installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.

3.10.2 Signage

Signs on large- scale ground-mounted solar photovoltaic installations shall comply with a municipality's sign bylaw. A sign consistent with a municipality's sign bylaw shall be required to identify the owner and provide a 24-hour emergency contact phone number.

Solar photovoltaic installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the solar photovoltaic installation.

3.10.3 Utility Connections

Reasonable efforts, as determined by the Site Plan Review Authority, shall be made to place all utility connections from the solar photovoltaic installation underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.

3.11 Safety and Environmental Standards

3.11.1 Emergency Services

The large scale solar photovoltaic installation owner or operator shall provide a copy of the project summary, electrical schematic, and site plan to the local fire chief.
Upon request the owner or operator shall cooperate with local emergency services in developing an emergency response plan. All means of shutting down the solar photovoltaic installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.

3.11.2 Land Clearing, Soil Erosion and Habitat Impacts

Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the large – scale ground-mounted solar photovoltaic installation or otherwise prescribed by applicable laws, regulations, and bylaws.

3.12 Monitoring and Maintenance

3.12.1 Solar Photovoltaic Installation Conditions

The large - scale ground-mounted solar photovoltaic installation owner or operator shall maintain the facility in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and integrity of security measures. Site access

shall be maintained to a level acceptable to the local Fire Chief and Emergency Medical Services. The owner or operator shall be responsible for the cost of maintaining the solar photovoltaic installation and any access road(s), unless accepted as a public way.

3.12.2 Modifications

All material modifications to a solar photovoltaic installation made after issuance of the required building permit shall require approval by the Site Plan Review Authority.

3.13 Abandonment or Decommissioning

3.13.1 Removal Requirements

Any large- scale ground-mounted solar photovoltaic installation which has reached the end of its useful life or has been abandoned consistent with Section 3.12.2 of this bylaw shall be removed. The owner or operator shall physically remove the installation no more than 150 days after the date of discontinued operations. The owner or operator shall notify the Site Plan Review Authority by certified mail of the proposed date of discontinued operations and plans for removal. Decommissioning shall consist of:

(a) Physical removal of all large- scale ground-mounted solar photovoltaic installations, structures, equipment, security barriers and transmission lines from the site.

(b) Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.

(c) Stabilization or re-vegetation of the site as necessary to minimize erosion. The Site Plan Review Authority may allow the owner or operator to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation.

3.13.2 Abandonment

Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, the solar photovoltaic installation shall be considered abandoned when it fails to operate for more than one year without the written consent of the Site Plan Review Authority. If the owner or operator of the large- scale ground-mounted solar photovoltaic installation fails to remove the installation in accordance with the requirements of this section within 150 days of abandonment or the proposed date of decommissioning, the town may enter the property and physically remove the installation.

3.13.3 Financial Surety

Proponents of large-scale ground-mounted solar photovoltaic projects shall provide a form of surety, either through escrow account, bond or otherwise, to cover the cost of removal in the event the town must remove the installation and remediate the landscape, in an amount and form determined to be reasonable by the Site Plan Review Authority, but in no event to exceed more than 125 percent of the cost of

removal and compliance with the additional requirements set forth herein, as determined by the project proponent. Such surety will not be required for municipally- or state-owned facilities. The project proponent shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for calculating increased removal costs due to inflation.

11.2 APPENDIX 2: SAMPLE LETTER FROM LEGAL COUNSEL REGARDING EXPEDITED PERMITTING

Section of Letter from Kopelman and Paige for Millbury

Criteria #2

Adopt an expedited application and permitting process under which these energy facilities may be situated within the municipality and which shall not exceed 1 year from the date of initial application to date of final approval

I reviewed the various local regulations and approval processes that pertain to the development of a by-right manufacturing or research and development facility in either the Industrial I or Industrial II District, including Site Plan Review Bylaw (Zoning Bylaws, Article 1, Section 12.4), Aquifer and Watershed Protection Overlay District Bylaw (Zoning Bylaws, Article 1, Section 47), Earth Removal Bylaw (General Bylaws, Article II, Section 14-21), the Post-construction Stormwater Management of New Developments and Redevelopments Bylaw (General Bylaws, Article III, Section 16-3), and the Rules and Regulations of the Town of Millbury Sewer Department. The sewer regulations can be viewed via the Town's website at http://www.millbury-ma.org/Public_DocumentsMillburyMA_Clerk/bylaws. The Town does not have local wetland bylaws. Please see the attached table, which identifies the deadlines for various approval processes. In my opinion, nothing within the above regulations would preclude issuance of a requisite permit for a renewable or alternative energy research and development or manufacturing facility within one year of application.

11.3 APPENDIX 3: SAMPLE FUEL-EFFICIENT VEHICLE POLICY

Introduction

Effective Date	
Revisions	
Board of Selectman Signature and Approval Date	

Definitions

Combined city and highway MPG (EPA Combined fuel economy): Combined Fuel Economy means the fuel economy from driving a combination of 43 percent city and 57 percent highway miles and is calculated as follows:

=1/[(0.43/City MPG) + (0.57/highway MPG)]

Drive System: The manner in which mechanical power is directly transmitted from the drive shaft to the wheels. The following codes are used in the drive field:

AWD=All Wheel Drive: 4-wheel drive automatically controlled by the vehicle power train system
4WD=4-Wheel Drive: driver selectable 4-wheel drive with 2-wheel drive option
2WD=2-Wheel Drive

Heavy-duty Vehicle: A vehicle with a manufacturer's gross vehicle weight rating (GVWR) of more than 8,500 pounds.

Policy Statement

In an effort to reduce the town of Upton's fuel consumption and energy costs, the Green Community Designation Study Committee hereby proposes a policy to purchase only fuel-efficient vehicles to meet this goal.

Purpose

To establish a requirement that the town of Upton purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable.

Applicability

This policy applies to all divisions and departments of the town of Upton.

Guidelines

All departments/divisions shall purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable.

The town of Upton will maintain an annual vehicle inventory for all vehicles and a plan for replacing any non-exempt vehicles with vehicles that meet, at a minimum, the fuel-efficiency ratings contained in the most recent guidance for Criterion 4 published by the Massachusetts Department of Energy Resources' Green Communities Division.

It is the responsibility of the town of Upton to check the Green Communities Divisions' Guidance for Criterion 4 for updates prior to ordering replacement vehicles.

Exemptions

- Heavy-duty vehicles: examples include fire-trucks, ambulances, and some public works trucks that meet the definition of a heavy-duty vehicle.
- Police cruisers, passenger vans, and cargo vans are exempt from this criterion since fuel-efficient models are not currently available. However, we commit to purchasing fuel-efficient police cruisers, passenger vans, and cargo vans when they become commercially available. Police and fire department administrative vehicles are not exempt and must meet fuel-efficiency requirements.

Inventory

The following information displayed on the Excel Spreadsheet will be updated on an annual basis and provided to the Green Communities Division:

Model	Make	Model Year	Year/Month Purchased	Drive System	>8,500 pounds? (Y or N)	Exempt or Non-Exempt	MPG Rating	Vehicle Function

*Note: Departments/Divisions may use EPA combined MPG estimates or actual combined MPG.

Fuel-Efficient Vehicle Replacement Plan

All non-exempt vehicles shall be replaced with fuel-efficient vehicles that adhere to the most recent Green Communities Criterion 4 Guidance. Vehicles shall be replaced when they are no longer operable and will not be recycled from one municipal department to another unless the recycled replacement vehicle meets the fuel-efficiency ratings outlined in the Policy. In addition, when replacing exempt vehicles, the function of the vehicle will be reviewed for potential replacement with a more fuel-efficient vehicle, including a fuel-efficient non-exempt vehicle.

The town of Upton will review on an annual basis the Vehicle Inventory, along with the Green Communities Criterion 4 Guidance, to plan for new acquisitions as part of planning for the new fiscal year budget.

Questions/Enforcement

All other inquiries should be directed to the department/division responsible for fleet management and/or fleet procurement. This policy is enforced by the Chief Administrative Officer and/or his/her designee(s).

11.4 APPENDIX 4: SAMPLE STRETCH ENERGY CODE WARRANT ARTICLE, MOTION AND BYLAW

SAMPLE TOWN WARRANT ARTICLE

To see if the Town will vote to enact Chapter of the Town of _General Bylaws, entitled "Stretch Energy Code" for the purpose of regulating the design and construction of buildings for the effective use of energy, pursuant to Appendix 115.AA of the Massachusetts Building Code, 780 CMR, the Stretch Energy Code, including future editions, amendments or modifications thereto, a copy of which is on file with the Town Clerk, or take any other action relative thereto.

SAMPLE TOWN MEETING MOTION

I move that the Town will enact Chapter _of the Town of _General Bylaws, entitled "Stretch Energy Code" for the purpose of regulating the design and construction of buildings for the effective use of energy, pursuant to Appendix 115.AA of the Massachusetts Building Code, 780 CMR, the Stretch Energy Code, including future editions, amendments or modifications thereto.

SAMPLE BYLAW

Chapter _____

STRETCH ENERGY CODE

[Adopted 0-0-2012 ATM / STM by Art.]

§_____-1 Definitions
§_____-2 Purpose
§_____-3 Applicability
§_____-4 Stretch Energy Code

§_____-1 Definitions

International Energy Conservation Code (IECC) - The International Energy Conservation Code (IECC) is a building energy code created by the International Code Council. It is a model code adopted by many state and municipal governments in the United States for the establishment of minimum design and construction requirements for energy efficiency, and is updated on a three-year cycle. The baseline energy conservation requirements of the MA State Building Code are the IECC with Massachusetts amendments, as approved by the Board of Building Regulations and Standards.

Stretch Energy Code - Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the 8th edition Massachusetts building code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation Code (IECC) to improve the energy efficiency of buildings built to this code.

§_____-2 Purpose

The purpose of 780 CMR 115.AA is to provide a more energy efficient alternative to the Base Energy Code applicable to the relevant sections of the building code for both new construction and existing buildings.

§_____-3 Applicability

This code applies to residential and commercial buildings. Buildings not included in this scope shall comply with 780 CMR 13, 34, 51, as applicable.

§_____-4 Stretch Energy Code

The Stretch Energy Code, as codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA, including any future editions, amendments or modifications, is herein incorporated by reference into the Town of ___General Bylaws, Chapter_____.

The Stretch Energy Code is enforceable by the inspector of buildings or building commissioner.